In the Specification:

Please revise the specification to read as follows:

The paragraph at page 1, line 9 is revised as follows:

"Density Nodule Detection in 3-Dimensional Medical Images," ~~attorney docket number 8498-035-999, filed concurrently herewith;~~ Serial No. 09/993,792, filed November 23, 2001;

The paragraph at page 1, line 11 is revised as follows:

"Method and System for the Display of Regions of Interest in Medical Images," Serial No. ______ 09/990,508, filed November 21, 2001~~; attorney docket number 8498-039-999~~;

The paragraph at page 1, line 13 is revised as follows:

"Vessel Segmentation with Nodule Detection," ~~attorney docket number 8498-042-999, filed concurrently herewith;~~ Serial No. 09/993,791, filed November 23, 2001;

The paragraph at page 1, line 15 is revised as follows:

"Lung Field Segmentation from CT Thoracic Images," ~~attorney docket number 8498-044-999, filed concurrently herewith, each of which is incorporated herein by reference;~~ Serial No. 09/993,793, filed November 23, 2001;

The paragraph at page 1, line 17 is revised as follows:

"Pleural Nodule Detection from CT Thoracic Images," ~~attorney docket number 8498-045-999, filed concurrently herewith, each of which is incorporated herein by reference~~ Serial No. 09/993,789, filed November 23, 2001; and

The paragraph at page 1, line 19 is revised as follows:

"Graphical User Interface for Display of Anatomical Information," Serial ~~No.~~ ______ No. 09/990,511, filed November 21, 2001, claiming priority from Serial No. 60/252,743, filed November 22, 2000 and ~~claiming priority to the U.S. Provisional Application~~ from Serial Number 60/314,582 filed August 24, 2001.

The paragraph at page 9, line 7 is revised as follows:

More details on nodule detection in 3-D images can be found in the above-referenced applications "Pleural Nodule Detection from CT Thoracic Images," Serial No. ~~_____ (attorney docket number 8498-045-999),~~ 09/993,789, filed November 23, 2001 and "Density Nodule Detection in 3-Dimensional Medical Images," Serial No. ~~_____ (attorney docket number 8498-035-999)~~ 09/993,792, filed November 23, 2001.

The paragraph at page 12, line 7 is revised as follows:

Figure 6 illustrates one process for determining optimal translation and rotation parameters in accordance with an embodiment of the invention. Generally, optimal translation and rotation parameters are determined based on a selected number of roughly matching points in the scan 401 and the scan 403. The selection of roughly matching points depends on the type of scan and the structure being scanned. Typically, specific identifiable points on the boundary or identifiable contours are selected as matching points. Identifiable points are locations in a structure (e.g., tracheal bifurcations or specific bone formations) that are present in other similar/same anatomical structures and appear singularly in scans that are being analyzed. Identifiable contours are curves that can be parameterized and are capable of binding the anatomical structure in a singular descriptive way. Generally, a rough estimation of the boundaries of an anatomical structure is performed for the selection of rough matching points. At step 602, an anatomical structure in both scan 401 and scan 403 is segmented to obtain segmented anatomical maps. In an exemplary embodiment, the segmentation is performed to the extent necessary for selecting roughly matching points. For example, an anatomical segmentation is described in the "Lung Field Segmentation from CT Thoracic Images," Serial No. ~~_____, (attorney docket number 8498-044-999)~~ 09/993,793, filed November 23, 2001, and incorporated by reference.

The paragraph at page 2, line 10 is revised as follows:

Digital acquisition systems for creating digital images include digital X-ray ~~film~~ radiography, computed tomography ("CT") imaging, magnetic resonance imaging ("MRI") and nuclear medicine imaging techniques, such as positron emission tomography ("PET") and single photon emission computed tomography ("SPECT"). Digital images can also be

created from analog images by, for example, scanning analog images, such as typical ~~x-rays~~ x-ray films, into a digitized form. Further information concerning digital acquisition systems is found in our above-referenced copending application "Graphical User Interface for Display of Anatomical Information".

The paragraph at page 5, line 31 is revised as follows:

Once patient scans have been obtained, the invention is capable of registering a first scan to a second scan in 2-D or 3-D. The systems and methods disclosed herein for mapping or autofusing one image to another image ~~compensates~~ compensate for both extrinsic and intrinsic variations. In one aspect, a hierarchical registration algorithm is used to address the two types of variations separately. The output of the registration provides the input necessary for other automated computations, such as volume and size comparisons and measurements.

The paragraph at page 6, line 24 is revised as follows:

The present invention is a system and method for the mapping and image registration of 3-D image data volumes or 2-D image data planes. Image volumes can be displayed on a graphical user interface ("GUI") to provide comparison information for medical diagnosis and physiological evaluation. The system and method can display various planar views and allows for highlighting ROIs and receiving user input regarding specific image data to be presented and selected.

The paragraph at page 7, line 10 is revised as follows:

The digital image sections to be processed, rendered, displayed or otherwise used ~~includes~~ include digitized images acquired through any plane, including, without limitation, ~~saggtal~~ sagittal, coronal and axial (or horizontal, transverse) planes and including planes at various angles to the ~~saggtal~~ sagittal, coronal or axial planes. While the disclosure may refer to a particular plane or section, such as an axial section or plane, it is to be understood that any reference to a particular plane is not necessarily intended to be limited to that particular plane, as the invention can apply to any plane an orientation acquired by any digital acquisition system.

The paragraph at page 15, line 33 is revised as follows:

Due to intrinsic differences in the structures scanned, the global similarity transformation typically cannot achieve the degree of local accuracy desired. To compensate for intrinsic differences, an iterative motion-tracking algorithm for a three-dimensional data set is preferably used to determine transformation parameters for local similarity transformations. In one aspect, employing motion-tracking algorithms has the advantage of not having to assume a rigid body transformation for an anatomical structure being registered such as with the atlas model. Figure 8 illustrates an exemplary local similarity transformation process in accordance with an embodiment of the invention. At step 802 a feature selection process is performed on the scan 401. The feature selection process ensures concentration on registering highly identifiable points that are likely to correlate to other identifiable features in the scan 403. In a preferred embodiment, local similarity transformations are performed on the selected highly identifiable points (or feature points), not every point in the scan 401. In an exemplary embodiment, the feature points are selected using Shi-Tomasi's method. For more information, please see "An Iterative Image Registration Technique with an Application to Stereo Vision," Bruce D. Lucas and Takeo Kanade, Proceedings of the 7th International Joint Conference on Artificial Intelligence, 1981 [Lucas-Kanade] and "Good features to track," J. Shi and C. Tomasi, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, pages 593-600, June 1994 [Shi-Tomasi]. These references are hereby incorporated for all purposes. After the feature points have been selected, for each selected feature point, a feature tracking process is performed (step 804). In an exemplary embodiment, local registration parameters are found using a 3-D iterative factorization technique. In an exemplary embodiment, the iterative factorization technique is as described by Lucas-Kanade for 2-D image registration in a stereo matching application as referenced above except adapted for 3-D images. The Lucas-Kanade technique was also described for finding optical flow fields in motion sequences in "A Paraperspective Factorization Method for ~~Shaoe~~ Snake and Motion Recovery," Conrad J. Poelman and Takeo Kanade, Technical Report CMU-CS-92-208, Carnegie Mellon University, Pittsburgh, PA, October 1992. At step 804, features are accepted from two 3-D data sets to perform the feature tracking.